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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,652	07/24/2003	Hideyo Ohtsuki	240624US2X	9733

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EXAMINER

HAN, JASON

ART UNIT PAPER NUMBER

2875

DATE MAILED: 12/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/625,652	Applicant(s) OHTSUKI ET AL.	
	Examiner Jason M Han	Art Unit 2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on July 26, 2002. It is noted, however, that applicant has not filed a certified copy of the 2002-217592 application as required by 35 U.S.C. 119(b). A copy of the application has been received, but not in its entirety. Please resubmit the entire application to receive appropriate priority.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claim 14 is objected to because of the following informalities: The limitation recites the "plurality of light sources" in line 4 of the claim. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Parkyn, Jr. et al. (U.S. Patent 5806955).

6. With regards to Claim 1, Parkyn discloses a planar light source device including:

- a plurality of light sources emitting different colors of light [Figure 30: (1052, 1053, 1054); Column 17, Lines 52-60];
- a light guide plate [Figure 30: (1027)] receiving light from the plurality of light sources at a side face to distribute the light over a surface thereof;
- wherein a light emission angle differs among the plurality of light sources; the above limitation has been rejected in light of the specification, but has been rendered the broadest interpretation (MPEP 2111); it is inherent that the light sources (e.g. LEDs) would have an emission angle that differs from one another given that the location of the light sources are not the same.

7. With regards to Claim 4, Parkyn discloses the plurality of light sources being red, green, and blue light emitting diodes [Figure 30: (1052, 1053, 1054); Column 17, Lines 52-60].

8. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Steiner et al. (U.S. Patent 5748828).

9. With regards to Claim 14, Steiner discloses a planar light source device including:

- a light source [Figure 3: (10)];

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- a light guide plate [Figure 3: (12)] receiving light from the plurality of light sources at a side face to distribute the light over a surface thereof; and
- a hologram [Figure 3: (40)] diffracting different light at different angles [Figure 3: (151, 152, 153); Column 6, Lines 33-39].

10. With regard to Claims 15-16, Steiner discloses the claimed invention (e.g. hologram disposed above an emission surface [Figure 3: (11)] of the light guide plate) except for the hologram disposed between the light source and the light guide plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have placed the hologram between the light source and the light guide plate, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japiske*, 86 USPQ 70. In this case, it is an obvious design preference with respect to the disposition of the hologram, wherein illumination may be optically adjusted by both the light guide and hologram to perform similar results regardless of which component comes first in the light's path.

11. With regards to Claim 17, Steiner teaches the hologram diffracting shorter wavelength light [Figure 3: (153), blue] at an angle larger than the longer wavelength light [Figure 3: (152), green]. The examiner makes note of the limitation in light of the specification and understands that the red wavelength light [Figure 3: (151)] is not diffracted at an angle smaller than the shorter green wavelength light, but has broadly interpreted the claim in this rejection [MPEP 2111]. It should further be noted that Steiner's reference is functionally

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equivalent in diffracting the different hues at an angle corresponding to a region on the LCD for that specific color / wavelength.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parkyn, Jr. et al. (U.S. Patent 5806955).

Parkyn discloses the claimed invention as cited above. In addition, Parkyn teaches a refractor [Figure 30: (1027, 1027')] mounted on an emission surface of each of the plurality of light sources for changing the direction of light [Claim 20].

Parkyn does not specifically teach the refractor having different shapes for each of the light sources, nor a refractor wherein the angle of light emission is smaller for the light sources with a longer wavelength.

However, Parkyn does teach different shaped refractors / TIR lenses wherein light is collimated or diffused according to a desired optical effect on the illumination [Figures 1-28].

It would have been obvious to modify the emission surface with different facets corresponding to a specific light wavelength to ensure proper light distribution as well as color mixing means for the light emitting diodes within the

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LCD panel [Column 1, Line 66 – Column 2, Line 5]. Such a configuration is commonly known in the art, whereby a lens optically affects [e.g. refracts] an illumination with respect to color. Parkyn corroborates, "Radiant energy is redirected to or from a predetermined zone or zones; such redirection having a predetermined degree of concentration and/or chromatic dispersion [Column 1, Lines 18-20]." The examiner also considers such a teaching to be an obvious motivation for affecting the illumination to decrease color shifting or to prevent display colors of disproportionate intensity.

13. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parkyn, Jr. et al. (U.S. Patent 5806955) as applied to Claim 1 above, and further in view of Vriens (U.S. Patent 4882617).

Parkyn discloses the claimed invention as cited above. In addition, Parkyn teaches a liquid crystal panel [Figure 30: (1042)] placed above an emission surface of the planar light source.

Parkyn does not specifically teach the liquid crystal panel having two substrates with a liquid crystal layer interposed therebetween, whereby the different light sources have different light emission angles in order that wavelength dependence of transmittance at a viewing direction in the liquid crystal panel is canceled out by wavelength dependence of luminance at the viewing direction in the planar light source device.

Vriens teaches a liquid crystal display device having a liquid crystal [Figure 2: (12)] as an electro-optical medium which is present between two parallel transparent substrates [Figure 2: (13, 14)], whereby light / radiation

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[Figure 2: (10)] transmits through a phosphor [Figure 2: (18)] and interference layers [Figure 2: (22, 23)] that filters and emits a hue with purity and contrast [Column 5, Line 62 – Column 6, Line 13].

It would have been obvious to modify the liquid crystal display of Parkyn to incorporate the panel with two substrates of Vriens in order to improve overall brightness and color purity. The examiner further makes note that such limitations are commonly held in the art whereby color filters are disposed adjacent to a liquid crystal panel to cancel out undesired wavelengths of light at certain locations for a desired output.

14. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parkyn, Jr. et al. (U.S. Patent 5806955).

With regard to Claims 7-10, Parkyn discloses a planar light source device including:

- a plurality of light sources emitting different colors of light [Figure 30: (1052, 1053, 1054); Column 17, Lines 52-60];
- a light guide plate [Figure 30: (1027)] receiving light from the plurality of light sources at a side face to distribute the light over a surface thereof; and
- a prismatic refractor [Figure 30: (1027, 1027')] mounted on an emission surface of the light guide for changing the direction of illumination from the plurality of light sources [Claim 20].

Parkyn does not specifically teach the prismatic refractor having different refraction angles and/or shapes corresponding to the different colored light

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sources, nor a prismatic refractor wherein the angle of light emission is smaller for the light sources with a longer wavelength.

However, Parkyn does teach different shaped prismatic refractors / TIR lenses wherein light is collimated or diffused according to a desired optical effect on the illumination [Figures 1-28].

It would have been obvious to modify the emission surface with different facets on the prismatic refractor corresponding to a specific light wavelength to ensure proper light distribution as well as color mixing means for the light emitting diodes within the LCD panel [Column 1, Line 66 – Column 2, Line 5]. Such a configuration is commonly known in the art, whereby a lens optically affects [e.g. refracts] an illumination with respect to color. Parkyn corroborates, “Radiant energy is redirected to or from a predetermined zone or zones; such redirection having a predetermined degree of concentration and/or chromatic dispersion [Column 1, Lines 18-20].” The examiner also considers such a teaching to be an obvious motivation for affecting the illumination to decrease color shifting or to prevent display colors of disproportionate intensity.

15. With regards to Claim 11, Parkyn discloses the plurality of light sources being red, green, and blue light emitting diodes [Figure 30: (1052, 1053, 1054); Column 17, Lines 52-60].

16. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parkyn, Jr. et al. (U.S. Patent 5806955) as applied to Claim 7 above, and further in view of Vriens (U.S. Patent 4882617).

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Parkyn discloses the claimed invention as cited above. In addition, Parkyn teaches a liquid crystal panel [Figure 30: (1042)] placed above an emission surface of the planar light source.

Parkyn does not specifically teach the liquid crystal panel having two substrates with a liquid crystal layer interposed therebetween, whereby the different light sources have different light emission angles in order that wavelength dependence of transmittance at a viewing direction in the liquid crystal panel is canceled out by wavelength dependence of luminance at the viewing direction in the planar light source device.

Vriens teaches a liquid crystal display device having a liquid crystal [Figure 2: (12)] as an electro-optical medium which is present between two parallel transparent substrates [Figure 2: (13, 14)], whereby light / radiation [Figure 2: (10)] transmits through a phosphor [Figure 2: (18)] and interference layers [Figure 2: (22, 23)] that filters and emits a hue with purity and contrast [Column 5, Line 62 – Column 6, Line 13].

It would have been obvious to modify the liquid crystal display of Parkyn to incorporate the panel with two substrates of Vriens in order to improve overall brightness and color purity. The examiner further makes note that such limitations are commonly held in the art whereby color filters are disposed adjacent to a liquid crystal panel to cancel out undesired wavelengths of light at certain locations for a desired output.

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17. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steiner et al. (U.S. Patent 5748828) as applied to Claim 14 above, and further in view of Vriens (U.S. Patent 4882617).

Steiner discloses the claimed invention as cited above. In addition, Steiner teaches a liquid crystal panel [Figure 3: (48)] placed above an emission surface of the planar light source.

Steiner does not specifically teach the liquid crystal panel having two substrates with a liquid crystal layer interposed therebetween, whereby the hologram is arranged in order that wavelength dependence of transmittance at a viewing direction in the liquid crystal panel is canceled out by wavelength dependence of luminance at the viewing direction in the planar light source device.

Vriens teaches a liquid crystal display device having a liquid crystal [Figure 2: (12)] as an electro-optical medium which is present between two parallel transparent substrates [Figure 2: (13, 14)], whereby light / radiation [Figure 2: (10)] transmits through a phosphor [Figure 2: (18)] and interference layers [Figure 2: (22, 23)] that filters and emits a hue with purity and contrast [Column 5, Line 62 – Column 6, Line 13].

It would have been obvious to modify the liquid crystal display of Steiner to incorporate the panel with two substrates of Vriens in order to improve overall brightness and color purity. The examiner further makes note that such limitations are commonly held in the art whereby color filters are disposed adjacent to a liquid crystal panel to cancel out undesired wavelengths of light at

certain locations for a desired output. Steiner corroborates motivation, "Similarly, the three desired colors may be provided by coupling the output light of three types of light emitting diodes (LEDs), one red, one green and one blue, to the clear optical waveguide of the backlight. In cases where the white light source is a continuum, the unwanted colors of the visible spectrum may be removed by arranging the optics so that those unwanted colors fall onto the black matrix surrounding the subpixels of the LCD and are absorbed. Alternatively, in all cases, the LCD may be operated with the color filters in place in front of the subpixels of the display. Such an arrangement, while not fully optimal from a power utilization standpoint, will still operate with an improved power efficiency over a standard backlight LCD because the light separating and directing means will still direct the majority of the proper color of light to the proper color filter where the resulting loss will be only the transmission loss of the filter for its own color, typically 20 to 40%. Unwanted colors of light will be absorbed by the filters and removed from the image which is transmitted to the view [Column 6, Line 62 – Column 7, Line 14]."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references have been cited to further show the state of the art pertinent to the current application, but may not be exhaustive:

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US Patent 5211463 to Kalmanash;	US Patent 5303322 to Winston et al;
US Patent 5396406 to Ketchpel;	US Patent 5475512 to Nakazawa et al;
US Patent 5613751 to Parker et al;	US Patent 5648874 to Sawaki et al;
US Patent 5703667 to Ochiai;	US Patent 5786665 to Ohtsuki et al;
US Patent 5816677 to Kuermatsu et al;	US Patent 5998925 to Shimuzu et al;
US Patent 6011602 to Miyashita et al;	US Patent 6020676 to Ury et al;
US Patent 6044196 to Winston et al;	US Patent 6072171 to Nakamura et al;
US Patent 6088159 to Weber et al;	US Patent 6115152 to Popovich et al;
US Patent 6144424 to Okuda et al;	US Patent 6167182 to Shinohara et al;
US Patent 6196691 to Ochiai;	US Patent 6208466 to Liu et al;
US Patent 6268092 to Akashi et al;	US Patent 6286970 to Egawa et al;
US Patent 6301026 to Ueda;	US Patent 6315440 to Satoh;
US Publication 2001/0043163 to Waldern et al;	US Publication 2001/0055208 to Kimura;
US Patent 6345899 to Kimura;	US Patent 6345899 to Ohkawa et al;
US Patent 6357903 to Furusawa et al;	US Patent 6357904 to Kawashima;
US Patent 6366409 to Umemoto et al;	US Patent 6371623 to Toyoda;
US Patent 6386720 to Mochizuki;	US Patent 6464366 to Lin et al;
US Patent 6480307 to Yang;	US Patent 6481130 to Wu;
US Patent 6508564 to Kuwabara et al;	US Publication 2003/0016521 to Wang et al;
US Patent 6522373 to Hira et al;	US Patent 6531230 to Weber et al;
US Patent 6540377 to Ota et al;	US Patent 6550953 to Ichikawa et al;
US Patent 6568822 to Boyd et al;	US Patent 6601962 to Ehara et al;
US Patent 6601970 to Ueda et al;	US Publication 2003/0147151 to Hwang;
US Patent 6608332 to Shimizu et al;	US Patent 6623132 to Lekson et al;
US Patent 6654082 to Sohda et al;	US Patent 6669350 to Yamashita et al;
US Patent 6672733 to Nagatani;	US Patent 6672734 to Lammers;
US Patent 6676268 to Ohkawa;	US Patent 6700634 to Taniguchi et al;
US Patent 6712482 to Kawakami et al;	US Publication 2004/0108971 to Waldern et al;

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US Publication 2004/0136038 to Holmes et al; US Patent 6788358 to Kim et al;

US Patent 67911636 to Paolini et al; US Patent 6805468 to Itoh et al;

Japanese Publication 2000-206411 to Ono Toshiaki;

Japanese Publication 2001-035229 to Shimura Takashi;

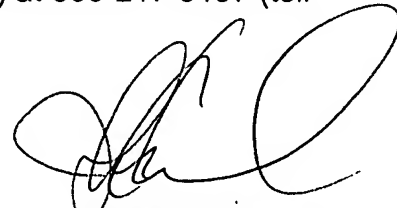
Japanese Publication 2001-043721 to Kurokawa Mitsuaki.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Han whose telephone number is (571) 272-2207. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMH (11/26/2004)



JOHN ANTHONY WARD
PRIMARY EXAMINER